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first upstream data stream from a first user source via an Ethernet interface, modulates a first signal with the first upstream data stream and transmits the modulated first signal to the head-end via the outside plant; and

a second network unit, then second network unit being coupled to the splitter via a second of the plurality of drop fibers, wherein the second network unit receives a second upstream data stream from a second user source via an Ethernet interface, modulates a second signal with the second upstream data stream and transmits the modulated second signal to the head-end via the outside plant,

whereby the first and second network units can transmit the modulated first and second signals to the head-end substantially simultaneously without collision.

7. The system of claim 2, wherein each network unit includes:

an adapter circuit, the adapter circuit receiving the upstream data;  
a modulator, the modulator being coupled to the adapter circuit and modulating the carrier signal with the upstream data; and  
a transmitter, the transmitter being coupled to the modulator and generating an optical signal in accordance with the modulated carrier signal.

Please cancel claims 3 and 6.

#### REMARKS

This response is intended as a full and complete response to the Office Action dated August 12, 2002. In the Office Action, the Examiner indicates that claims 1-15 are pending, of which claims 1-15 stand rejected. By this response, claims 1 and 7 have been amended, claims 3 and 6 are cancelled, and claims 2, 4, 5, and 8-15 continue unamended.

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In view of both the amendments presented above and the following discussion, the Applicant submits that none of the claims now pending in the application are non-enabling, anticipated, or obvious under the respective provisions of 35 U.S.C. § 112, §102, and §103. Thus, the Applicant believes that they are all in allowable form.

It is to be understood that the Applicant, by amending the claims, does not acquiesce to the Examiner's characterizations of the art of record or to applicant's subject matter recited in the pending claims. Further, Applicant is not acquiescing to the Examiner's statements as to the applicability of the prior art of record to the pending claims by filing the instant responsive amendments. In particular, the Applicants has amended claims 1 and 7 for administrative purposes to better claim the invention. The above amendments to these claims are not made for patentability reasons. As discussed below, the Applicant believes claims 1 and 7 are patentable over the cited prior art. As such, the above amendments to claims 1 and 7 do not invoke the restrictions on the Doctrine of Equivalents as required under Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., 234 F.3d 558 (Fed. Cir. 2000) (en banc). Consequently, the Applicant should be accorded the full scope of his claims under the Doctrine of Equivalents.

#### **REJECTION OF CLAIMS UNDER 35 U.S.C. §102**

The Examiner has rejected claims 1-2, 4-5 and 13-15 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,550,666 issued August 27, 1996 to Zirngibl (hereinafter Zirngibl). Specifically, the Examiner alleges that Zirngibl discloses a data communication comprising a distribution fiber, a splitter, a plurality of drop fibers, a head-end and first and second optical network units that modulate data on a subcarrier. The rejection is respectfully traversed.

In response, Applicant has hereinabove amended claim 1 to read as follows:

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1. A data communications system comprising:
  - an outside plant, the outside plant including a distribution fiber, a splitter and a plurality of drop fibers;
  - a head-end, the head-end further comprising an Ethernet adapter circuit and being coupled to the splitter via the distribution fiber;
  - a first network unit, the first network unit being coupled to the splitter via a first of the plurality of drop fibers, wherein the first network unit receives a first upstream data stream from a first user source via an Ethernet interface, modulates a first signal with the first upstream data stream and transmits the modulated first signal to the head-end via the outside plant; and
  - a second network unit, then second network unit being coupled to the splitter via a second of the plurality of drop fibers, wherein the second network unit receives a second upstream data stream from a second user source via an Ethernet interface, modulates a second signal with the second upstream data stream and transmits the modulated second signal to the head-end via the outside plant,whereby the first and second network units can transmit the modulated first and second signals to the head-end substantially simultaneously without collision.

"Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim" (Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co., 730 F.2d 1452, 221 USPQ 481, 485 (Fed. Cir. 1984)(citing Connell v. Sears, Roebuck & Co., 722 F.2d 1542, 220 USPQ 193 (Fed. Cir. 1983)) (emphasis added). The Zirngibl reference fails to disclose each and every element of the claimed invention, as arranged in the claim. Specifically, the head-end of Zirngibl is not provided with an Ethernet adapter circuit. It is noted that such admission was made the by Examiner in the August 12 Office Action at page 3, Section 4 (regarding the obviousness argument under 35 U.S.C. § 103). Accordingly, it is respectfully submitted that claim 1 is not anticipated by Zirngibl.

As such, the Applicant submits that claim 1 is not anticipated and fully satisfies the requirements under 35 U.S.C. § 102 and is patentable thereunder. Furthermore, claims 2, 4-5, 7-15 depend, either directly or indirectly, from independent claim 1 and recite additional features thereof. As such, and for at

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least the same reasons discussed above, the Applicant submits that these dependent claims also fully satisfy the requirements under 35 U.S.C. § 102 and are patentable thereunder. Therefore, the Applicant respectfully requests that the rejection be withdrawn.

### **REJECTION OF CLAIMS UNDER 35 U.S.C. §103**

The Examiner has rejected claims 3 and 6 under 35 U.S.C. § 103 as being obvious and unpatentable over Zirngibl in view of the Global Telecommunications Conference paper entitled "Low Cost FTTH System Based on PDS Architecture", GLOBECOM 1997, IEEE, Volume 2, 1997 by Amemiya et al. (hereinafter Amemiya). Specifically, the Examiner has alleged that the difference between Zirngibl and the claimed invention is that Zirngibl does not show an Ethernet interface; however, Amemiya allegedly teaches the interfaces for network units and the head-end in Figure 1. Further, the Examiner has indicated that the first optical network unit includes an Ethernet adapter circuit (10 base-T) which is coupled via another internet interface (labeled IF) in the head-end to the router. The Examiner has offered that since Ethernet is a popular interface for connecting to the internet and is widely available, it would have been obvious to one of ordinary skill in the art to have made network units receive upstream data via an Ethernet interface and include an Ethernet interface in the head-end as taught by Amemiya. Claims 3 and 6 have hereinabove been cancelled from the application; hence, the rejection to these claims is deemed moot. However, the Applicant has incorporated the features of dependent claims 3 and 6 into claim 1 and offers the following comments with regard to the cited references.

The test under 35 U.S.C. § 103 is not whether an improvement or a use set forth in a patent would have been obvious or non-obvious; rather the test is whether the claimed invention, considered as a whole, would have been obvious. Jones v. Hardy, 110 USPQ 1021, 1024 (Fed. Cir. 1984) (emphasis added). Thus, it is impermissible to focus either on the "gist" or "core" of the invention,

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Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve, Inc., 230 USPQ 416, 420 (Fed. Cir. 1986) (emphasis added). Moreover, the invention as a whole is not restricted to the specific subject matter claimed, but also embraces its properties and the problem it solves. In re Wright, 6 USPQ 2d 1959, 1961 (Fed. Cir. 1988) (emphasis added).

The references must be taken in their entirety, including those portions which argue against obviousness. Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve, Inc., 230 U.S.P.Q. 416, 420 Fed. Cir. 1986). It is impermissible within the framework of the 35 U.S.C. § 103 to pick and choose from a reference only so much of it as will support a conclusion of obviousness to the exclusion of other parts necessary to a full appreciation of what the reference fairly suggests to one skilled in the art. Id. at 419.

Specifically, Zirngibl is concerned with providing a downstream transmission of information signals in an optical network via wavelength division multiplexing (WDM) multi-frequency techniques. Additionally, and as per the Summary of the Invention section of Zirngibl at column 2, lines 28-38, "For upstream transmission, the plurality of broadband sources provides a plurality of discrete optical wavelength carriers upon which, respectively, a plurality of information signals is impressed to create a plurality of optical information signals. The passive optical demultiplexer spectrally slices and multiplexes the plurality of upstream optical information signals. The wavelength selective coupler routes the multiplexed upstream signals from the remote node to a receiver in the central office. The receiver segregates the multiplexed signals into distinct information signals for further processing." Additionally, and at column 2, lines 45-50, "The upstream optical information signals are demultiplexed at the central office by using either TDM or subcarrier multiplexing (SCM), as is well known in the art...". Therefore, Zirngibl establishes information transfer protocols using either time division multiplex or the subcarrier techniques and is in no way considering or implementing Ethernet as a potential alternate, additional or replacement technology for transmitting optical information signals.

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Therefore, any additional references that present Ethernet-based information transfer protocols would be considered redundant in Zirngibl and not necessary or desirable for such a system. That is, at column 1, lines 57-67 Zirngibl addresses a need for a more economical and efficient wavelength division multiplexing network architecture. A tunable laser may emit only one optical wavelength at a time, a well-known characteristic of time division multiplexing and, therefore, inefficiently utilizes the time dimension of the transmission path. By using a wavelength division multiplexing multi-frequency optical source, Zirngibl takes advantage of the multi-frequency source and newer modulation techniques to solve their problem of inefficient WDM multiplexing architecture. Once again, alternate methods of information transfer or protocols (such as Ethernet) are not addressed or considered in Zirngibl. It is only the Examiner's (Impermissible) hindsight that supports the rejection. As such, Zirngibl in combination with any additional reference which introduces Ethernet does not obviate any of the currently pending claims.

Additionally, and with respect to Amemiya, this reference introduces a 10 base-T information transfer device only at a single location on the customer end. That is, the PDS system configuration shown in Amemiya is constructed and designed to pass a variety of different data via a variety of different protocols by providing each specific data transfer device with its own and dedicated interface to subsequently pass its information through TCM/TDMA and/or WDM techniques. Accordingly, it is respectfully submitted that Amemiya also incorporates old (WDM) information transfer protocols as its sole means of transferring data from a service node to a customer. The subject invention uses Ethernet transfer protocols by incorporating Ethernet adapter circuits and interfaces at all components (i.e., the head-end and first and second network units). Since all of the components on the customer end and service node end of Amemiya are not provided with an Ethernet interface (i.e., POTS is provided to the system through a POTS interface at the customer end and not via an Ethernet interface), Amemiya is not suggestive of any of the currently pending

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claims. In fact, Amemiya teaches away from the subject invention by not exclusively incorporating Ethernet at all components of the customer end.

For prior art reference to be combined to render obvious a subsequent invention under 35 U.S.C. § 103, there must be something in the prior art as a whole which suggests the desirability, and thus the obviousness, of making the combination. Uniroyal v. Rudkin-Wiley, 5 U.S.P.SQ.2d 1434, 1438 (Fed. Cir. 1988). The teachings of the references can be combined only if there is some suggestion or incentive in the prior art to do so. In re Fine, 5 U.S.P.SQ.2d 1596, 1599 (Fed. Cir. 1988). Hindsight is strictly forbidden. It is impermissible to use the claims as a framework to pick and choose among individual references to recreate the claimed invention Id. at 1600; W.L. Gore Associates, Inc., v. Garlock, Inc., 220 U.S.P.Q. 303, 312 (Fed. Cir. 1983).

As such, the Applicant submits that any and all pending claims in the subject invention are not obvious and fully satisfy the requirements under 35 U.S.C. § 103 and are patentable thereunder.

The Examiner has rejected claims 7, 9 and 11 under 35 U.S.C. § 103 as being unpatentable over Zirngibl in view of U.S. Patent No. 5, 822,102 to Bodeep et al. (hereinafter Bodeep). In response, Applicant has hereinabove amended claim 1 and provided arguments refuting the Examiner's position regarding anticipation and possible obviousness of the claim. Since claims 7, 9 and 11 depend either directly or indirectly from claim 1 and recite additional features thereof, it is respectfully submitted that these dependent claims are not obvious with respect to the cited references for at least the same reasons as that discussed above with respect to claim 1.

The Examiner has rejected claim 8 under 35 U.S.C. § 103 as being unpatentable over Zirngibl in view of Bodeep and in further view of U.S. Patent No. 6,137,607 to Feldman et al. In response, Applicant has hereinabove amended claim 1 and provided arguments refuting the Examiner's position regarding anticipation and possible obviousness of the claim. Since claim 8 depends either directly or indirectly from claim 1 and recite additional features

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thereof, it is respectfully submitted that the dependent claim is not obvious with respect to the cited references for at least the same reasons as that discussed above with respect to claim 1.

The Examiner has rejected claim 10 under 35 U.S.C. § 103 as being unpatentable over Zirngibl in view of Bodeep and in further view of U.S. Patent No. 5,896,211 to Wantanabe. In response, Applicant has hereinabove amended claim 1 and provided arguments refuting the Examiner's position regarding anticipation and possible obviousness of the claim. Since claim 10 depends either directly or indirectly from claim 1 and recite additional features thereof, it is respectfully submitted that the dependent claim is not obvious with respect to the cited references for at least the same reasons as that discussed above with respect to claim 1.

The Examiner has rejected claim 12 under 35 U.S.C. § 103 as being unpatentable over Zirngibl in view of Bodeep and in further view of Irie et al. In response, Applicant has hereinabove amended claim 1 and provided arguments refuting the Examiner's position regarding anticipation and possible obviousness of the claim. Since claim 12 depends either directly or indirectly from claim 1 and recite additional features thereof, it is respectfully submitted that the dependent claim is not obvious with respect to the cited references for at least the same reasons as that discussed above with respect to claim 1.

#### **CONCLUSION**

Thus, the Applicant submits that claims 1-15 are in condition for allowance. Furthermore, the specification and abstract has been amended as requested by the Examiner. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited.

If, however, the Examiner believes that there are any unresolved issues requiring adverse final action in any of the claims now pending in the application, it is requested that the Examiner telephone Mr. Eamon J. Wall at (732) 530-9404




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so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Respectfully submitted,

December 12, 2002

  
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Janet Kondrk  
Signature

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**APPENDIX**  
**MARK-UP OF CLAIMS**

1. A data communications system comprising:
  - an outside plant, the outside plant including a distribution fiber, a splitter and a plurality of drop fibers;
  - a head-end, the head-end further comprising an Ethernet adapter circuit and being coupled to the splitter via the distribution fiber;
  - a first network unit, the first network unit being coupled to the splitter via a first of the plurality of drop fibers, wherein the first network unit receives a first upstream data stream from a first user source [in a packet format] via an Ethernet interface, modulates a first signal with the first upstream data stream and transmits the modulated first signal to the head-end via the outside plant;
  - and
  - a second network unit, then second network unit being coupled to the splitter via a second of the plurality of drop fibers, wherein the second network unit receives a second upstream data stream from a second user source [in a packet format] via an Ethernet interface, modulates a second signal with the second upstream data stream and transmits the modulated second signal to the head-end via the outside plant,
  - whereby the first and second network units can transmit the modulated first and second signals to the head-end substantially simultaneously without collision.
  
7. The system of claim [1] 2, wherein each network unit includes:
  - an adapter circuit, the adapter circuit receiving the upstream data;
  - a modulator, the modulator being coupled to the adapter circuit and modulating the carrier signal with the upstream data; and
  - a transmitter, the transmitter being coupled to the modulator and generating an optical signal in accordance with the modulated carrier signal.